

P. ENT COOPERATION TREA

 BC
 PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

 Assistant Commissioner for Patents
 United States Patent and Trademark
 Office
 Box PCT
 Washington, D.C. 20231
 ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 05 January 2000 (05.01.00)	
International application No. PCT/EP99/02844	Applicant's or agent's file reference PAT98501PCT
International filing date (day/month/year) 27 April 1999 (27.04.99)	Priority date (day/month/year) 28 April 1998 (28.04.98)
Applicant HANSEN, Hans, H., H. et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

24 November 1999 (24.11.99)

☐ in a notice effecting later election filed with the International Bureau on:
2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Jean-Marie McAdams Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PAT98501PCT	FOR FURTHER ACTION		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP99/02844	International filing date (day/month/year) 27/04/1999	Priority date (day/month/year) 28/04/1998	
International Patent Classification (IPC) or national classification and IPC H04L12/00			
Applicant NOKIA MOBILE PHONES LIMITED et al.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 7 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 24/11/1999	Date of completion of this report 06.07.2000
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Körbler, G Telephone No. +49 89 2399 8250 <div style="text-align: right;">  </div>

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP99/02844

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

Description, pages:

1-15 as originally filed

Claims, No.:

1-14 as originally filed

Drawings, sheets:

1/3-3/3 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP99/02844

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims
	No:	Claims 1-14
Inventive step (IS)	Yes:	Claims
	No:	Claims 1-14
Industrial applicability (IA)	Yes:	Claims
	No:	Claims 1-14

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Cited document:

D1: WO 97 40457 A

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The present formulation of the independent method claims 1 and 5, which can be seen as concerning the same method (**see Item VIII.1**), fails to meet the requirements of Art. 33(3) PCT, because the subject-matter does not involve an inventive step.

The presently available closest prior art is given by document D1.

This document discloses:

A method of handling HTTP sessions (Figure 2, 55) between a communication terminal (60) and a corresponding server (50), wherein:

the communication terminal initiates a session by forwarding a request of data to the server (Figure 7 (200) (202)), said request comprises an identification of the requested data and a communication terminal identification number provided by the server (page 4 line 27- page 5 line 2);

the server, when receiving a request containing a communication terminal identification number, recalls user profile information from an associated database memory corresponding to said communication terminal identification number, and said user profile information indicates a data format which will be handled by the communication terminal; and

the server replies the request by forwarding the requested data in the format defined by the user profile information (page 5 line 10 - line 24).

This is large part of the wording of present claims 1 and 5 the subject matter of which differs from the disclosure of D1 only by using a wireless communication terminal for the client and the Wireless Session Protocol (WSP) for the session layer protocol (the prior art uses HTTP).

Very important is that in its essence, WSP is a binary version of HTTP 1.1.

The plain text headers of HTTP are translated into binary code.

WSP (Figure 1, 24) belongs to the same protocol layer (session layer) than HTTP (Figure 1, 14).

The method used for WSP (to set up a session between a client and a server) is known from HTTP and the subject matter of a wireless transmission are also known from the prior art, which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem (to set up a session between a client and a server) posed.

Consequently, the features of present claims 1 and 5 not explicitly mentioned in D1 are found by the skilled person in a most self-evident manner; they are not based on an inventive step, and claims 1 and 5 therefore fail to meet the requirements of Art. 33 PCT.

2. Independent claims 7 and 11, although phrased as system and apparatus claims, are nonetheless simple repetitions of the subject-matter of method claims 1 and 5 and hence do not meet the requirements of Article 33(3) PCT (inventive step).
3. In his reply to the written opinion the Applicant asserts that:
"...D1 only concerns a way of maintaining an active network connection (see D1 page 5 line 3-4). Therefore, the server and the terminal always has to re-establish a session when connecting to the server."
and
"...D1 discloses on page 4 lines 25-27 that the token acts to hold the logical connection to the server on an active or open condition until the client system is finished with the connection and releases it. Accordingly, it is not obvious from D1 that the following advantages can be achieved, i.e. maintaining the advantage of having an active connection to a server without resending user information and reducing the amount of redundant information upon following sessions."

However, document D1 discloses the technical feature of **maintaining** a continuous network connection between the client system and server system (see page 10, line 13-15: "Additional improvements...").

Moreover, document D1 further describes that the system overhead is further reduced and the system capacity is further increased for multiple interactions or transactions within a session by using the keep_alive feature **without re-establishing a session or re-sending the user-profile information** (page 10, line 16-27 "An advantageous means..." and page 11 line 12-15: "Thereafter, communications over...").

These arguments are therefore considered as not convincing.

Re Item VII

Certain defects in the international application

1. The independent claims are not in the two-part form required by Rule 6.3(b) PCT, with a preamble based on D1.
2. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
3. Contrary to the requirements of Rule 5.1 (a)(ii) PCT, the relevant background art disclosed in document D1 is not mentioned in the description, nor is this document identified therein.

Re Item VIII

Certain observations on the international application

1. The independent method Claims 1 and 5 do not meet the requirements of Article 6 PCT, because they lack conciseness.

The various definitions of the invention given in independent claims 1 and 5 are such that the claims as a whole are not concise, contrary to Article 6 PCT, in particular since the subject matter represented in the different claims overlaps to

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP99/02844

such an extent that they could have easily been formulated as a single independent claim, with dependent claims as appropriate.

2. Independent method Claims 1 or 5 do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT, that any independent claim must contain all the technical features essential to the definition of the invention.

In view of the description (see page 6, lines 5-17), it seems that **the informing of the client by the server when the time period has expired** indeed represents an essential feature to define the invention. Furthermore the following features:

- * **Header caching**
- * **defining a period of time in which the user profile information is stored in the database memory,**
- * **deleting user profile information from the database memory of the server upon expiration of said period of time**

also represent essential features.

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PAT98501PCT	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 99/ 02844	International filing date (day/month/year) 27/04/1999	(Earliest) Priority Date (day/month/year) 28/04/1998

Applicant

NOKIA MOBILE PHONES LIMITED et al.

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☒ because this figure better characterizes the invention.

3
☐ None of the figures.

INTERNATIONAL SEARCH REPORT

National Application No

PCT/EP 99/02844

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 H04L29/06 H04Q7/38 H04Q7/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04L H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 97 40457 A (INTERGRAPH CORP) 30 October 1997 (1997-10-30) page 1, line 28 -page 3, line 5 page 4, line 21 -page 5, line 24	1-14
A	ECKARDT T ET AL: "ON THE PERSONAL COMMUNICATIONS IMPACTS ON MULTIMEDIA TELESERVICES" MULTIMEDIA: ADVANCED TELESERVICES AND HIGH-SPEED COMMUNICATION ARCHITECTURES. INTERNATIONAL WORKSHOP, XX, XX, page 435-449 XP000613104 page 439 page 441 page 443 page 445 page 446 figures 2,3	1-14

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

17 November 1999

Date of mailing of the international search report

01/12/1999

Name and mailing address of the ISA

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Carnerero Álvaro, F

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 99/02844

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>EP 0 642 283 A (NOKIA MOBILE PHONES LTD ;NOKIA TELECOMMUNICATIONS OY (FI)) 8 March 1995 (1995-03-08) page 2, line 46 -page 3, line 21</p>	1-14

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 99/02844

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
WO 9740457	A	30-10-1997	EP	0894392 A	03-02-1999
EP 0642283	A	08-03-1995	FI	933894 A	07-03-1995
			JP	7170579 A	04-07-1995
			US	5802465 A	01-09-1998



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : H04L 12/00</p>	<p>A2</p>	<p>(11) International Publication Number: WO 99/56431</p> <p>(43) International Publication Date: 4 November 1999 (04.11.99)</p>		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>(21) International Application Number: PCT/EP99/02844</p> <p>(22) International Filing Date: 27 April 1999 (27.04.99)</p> <p>(30) Priority Data: 581/98 28 April 1998 (28.04.98) DK</p> <p>(71) Applicant (for all designated States except US): NOKIA MOBILE PHONES LIMITED [FI/FI]; Keilalahdentie 4, FIN-02150 Espoo (FI).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): HANSEN, Hans, H., H. [DK/DK]; Sonder Boulevard 78, 3th, DK-1720 Copenhagen V (DK). HANSEN, Lars, Bohn [DK/DK]; Arhusgade 84, 3tv, DK-2100 Copenhagen O (DK).</p> <p>(74) Agents: HIGGIN, Paul et al.; Nokia IPR Dept., Nokia House, Summit Avenue, Southwood, Farnborough, Hampshire GU14 ONG (GB).</p> </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published Without international search report and to be republished upon receipt of that report.</p> </td> </tr> </table>			<p>(21) International Application Number: PCT/EP99/02844</p> <p>(22) International Filing Date: 27 April 1999 (27.04.99)</p> <p>(30) Priority Data: 581/98 28 April 1998 (28.04.98) DK</p> <p>(71) Applicant (for all designated States except US): NOKIA MOBILE PHONES LIMITED [FI/FI]; Keilalahdentie 4, FIN-02150 Espoo (FI).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): HANSEN, Hans, H., H. [DK/DK]; Sonder Boulevard 78, 3th, DK-1720 Copenhagen V (DK). HANSEN, Lars, Bohn [DK/DK]; Arhusgade 84, 3tv, DK-2100 Copenhagen O (DK).</p> <p>(74) Agents: HIGGIN, Paul et al.; Nokia IPR Dept., Nokia House, Summit Avenue, Southwood, Farnborough, Hampshire GU14 ONG (GB).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published Without international search report and to be republished upon receipt of that report.</p>
<p>(21) International Application Number: PCT/EP99/02844</p> <p>(22) International Filing Date: 27 April 1999 (27.04.99)</p> <p>(30) Priority Data: 581/98 28 April 1998 (28.04.98) DK</p> <p>(71) Applicant (for all designated States except US): NOKIA MOBILE PHONES LIMITED [FI/FI]; Keilalahdentie 4, FIN-02150 Espoo (FI).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): HANSEN, Hans, H., H. [DK/DK]; Sonder Boulevard 78, 3th, DK-1720 Copenhagen V (DK). HANSEN, Lars, Bohn [DK/DK]; Arhusgade 84, 3tv, DK-2100 Copenhagen O (DK).</p> <p>(74) Agents: HIGGIN, Paul et al.; Nokia IPR Dept., Nokia House, Summit Avenue, Southwood, Farnborough, Hampshire GU14 ONG (GB).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published Without international search report and to be republished upon receipt of that report.</p>			
<p>(54) Title: A METHOD OF AND A NETWORK FOR HANDLING WIRELESS SESSION PROTOCOL (WSP) SESSIONS.</p> <div style="text-align: center; padding: 20px;"> </div>				
<p>(57) Abstract</p> <p>A communication terminal initiates a Wireless Session Protocol (WSP) session by forwarding a request of data to a server. The request comprises an identification of the requested data and a communication terminal identification number provided by the server. The server, when receiving a request containing a communication terminal identification number, recalls user profile information from an associated database memory corresponding to said communication terminal identification number. The user profile information indicates a data format which will be handled by the communication terminal. Then the server replies to the request by forwarding the requested data in the format defined by the user profile information.</p>				

FOR THE PURPOSES OF INFORMATION ONLY

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A method of and a network for handling Wireless Session Protocol (WSP) sessions.

5

The invention relates to a new method and system for a session service in a wireless session protocol (WSP) between a user and a server terminal.

10 The Wireless Application Protocol (WAP) is a result of continuous work to define an industry wide standard for developing applications over wireless communication networks. WAP is disclosed in the Wireless Application Protocol Architecture Specification; Version 30 April 1998; by Wireless Application Protocol Architecture Working Group;

15 The scope for the WAP working groups is to define a set of standards to be used by service applications. The wireless market is growing very quickly, and reaching new customers and services. To enable operators and manufacturers to meet the challenges in advanced services, differentiation and fast/flexible service creation WAP defines a set of protocols in transport,
20 session and application layers.

The Session layer protocol family in the WAP architecture is called the Wireless Session Protocol, WSP. WSP provides the upper-level application layer of WAP with an interface for session services and management. One
25 example of a session service is a connection-mode service that operates above a transaction layer protocol called Wireless Transport Layer (WTP), see also Wireless Application Protocol: Wireless Transport Protocol specification, version 30 April 1998, by Wireless Application Protocol Transport Working Group,

30

Another session service may be a connectionless service that operates above a secure or non-secure datagram service.

The Wireless Session Protocols comprises one protocol most suited for browsing applications (WSP/B). WSP/B provides HTTP 1.1 functionality and incorporates new features such as long-lived sessions, a common facility for data push, capability negotiation, and session suspend/resume. HTTP 1.1 is disclosed in Fielding, R., et. al., "Hypertext Transfer Protocol—HTTP/1.1", RFC 2068, UC Irvine, January 1997. The protocols in the WSP family are optimised for low bandwidth bearer networks with relatively long latency.

The WAP Architecture is very similar to the Internet Architecture. Fig.1 shows a comparison between the Internet Architecture 10 and the WAP Architecture 20. The Internet Architecture 10 comprises a Hypertext Markup Language (HTML) 12, e.g. Java Script, a Hypertext Transfer Protocol (HTTP) 14, Transport Layered Security (TLS) / Secure Sockets Layer (SSL) 16, and a Transport Configuration Protocol (TCP) / User Datagram Protocol (UDP) 18. The Internet Architecture 10 is a well known prior art, and is disclosed e.g. in US-A-5,657,390. The WAP Architecture 20 comprises a Wireless Application Protocol (WAE) 22 corresponding to HTML 12, a Wireless Session Layer (WSP) 24 corresponding to HTTP 14, a Wireless Transport Layered Security (WTLS) 26 corresponding to TLS / SSL 16, and a Wireless Transport Layer (WTP) 28 corresponding to TCP / UDP 18. Further, the WAP Architecture comprises different bearers 29 like e.g. SMS, USSD and CDMA 30. There is also a possibility to implement different kinds of services and applications in the WAP Architecture, e.g. Value Added Services (VAS). The WAP Architecture 20 is a well known prior art and more information about the different blocks WAE, WSP, WTLS, WTP and bearers is found in e.g. <http://www.wapforum.org/docs/technical.htm>.

The present invention relates to WSP, which provides a means for organized exchange of content between co-operating client/server applications. Specifically, it provides the applications with a means to:

- 5 a) establish an optionally secure, reliable session from client to server, and release the session in an orderly manner;
- b) exchange content between client and server;
- c) suspend and resume the session.

10 In addition, WSP also supports a non-confirmed session service. The connectionless session service can be used over unreliable transport when applications do not care about confirmation. The non-confirmed service is accessed outside the context of an established session.

15 In e.g. the GSM system it is relatively expensive to transfer data. At the same time it is desired to reduce the size of the required memory space in the phone.

EP-A2-0,851,696 discloses a way of providing data from an information database in response to a request from a mobile station in a wireless network, by using short messaging service, SMS. The subscriber uses a mobile station
20 to place a call via the wireless network and a PSTN to an information service provider. An identification (ID) of the mobile station is forwarded to the information service provider. That provider can then use the ID to retrieve a user personal identification number (PIN) or user identification number. The
25 database information service provider constructs a message containing the desired data and the appropriate PIN or user ID number and forwards that to a message centre. The message centre then forwards the data from the provider to the mobile station as an SMS.

However, this document EP-A2-0,851,696 uses the ID every time it retrieves a user PIN or user ID number. Thus, this procedure has to be repeated every time when the user sends a request to the server. This means that it will not be easier or faster when the user would like to establish another session. This is a major drawback since the cost for a call will then increase. Also, this document does not describe how it is possible to support different types of data formats/types, upon sending/receiving a request. One example of a data format/type supported by WAP is the MIME multipart format, which transports composite data objects (e.g. multipart/mixed), see WAP WSP draft version 02-Apr-1998, 7.4 Multipart data. WSP defines a compact binary form of the MIME multipart entity and the content type. Thus, there is a need to support different data formats of a WSP session, and to increase the speed to establish a session.

WO/A2/98/34414 discloses a communication system providing a subscriber unit (e.g. a portable phone) with access to an information network through gateway equipment that is coupled to a network server. The network server conveys data to the subscriber unit, as a respond to a request sent by the subscriber unit, via an SMS message. The request includes an identifier, which is used to communicate with the originating communication device via a message service (SMS) that provides external access to the radio communication system. The information network may be a public access network, such as the Internet, comprising world wide web (www) information sites.

However, as in EP-A2-0,851,696, the system in WO/A2/98/34414 has to repeat its procedure every time the user sends a request to the server. Thus, it will neither be easier or faster when the user would like to establish another session, i.e. it will establish the session as it usually does. In other words, the network has to identify the user every time the user would like to obtain data.

EP-A2-0,833,313 discloses a method and a system for transferring data from an Internet Protocol (IP) network to a mobile station in a non-IP network. A special server acts as an interface between the Internet and a CDPD network.

- 5 The mobile station could be a mobile phone, and the server is a software platform. The system permits the user to communicate with a data network while either in an idle mode or while in a voice mode.

- An object of the invention is to provide a method of handling Wireless Session
10 Protocol (WSP) sessions in such a way that the amount of redundant information is reduced.

- This is obtained by a method of handling Wireless Session Protocol (WSP) sessions between a wireless communication terminal and a corresponding
15 server, wherein the communication terminal initiates a session by forwarding a request of data to the server, said requests comprises an identification of the requested data and a communication terminal identification number provided by the server; the server, when receiving a request containing a communication terminal identification number, recalls user profile information
20 from an associated database memory corresponding to said communication terminal identification number, and said user profile information indicates a data format which shall be handled by the communication terminal; and the server replies to the request by forwarding the requested data in the format defined by the user profile information. Hereby the server unit is able to store
25 the user profile information for a period and to recall this information when appropriate. The requesting communication unit does not have to transmit information about its user profile once these are stored in the database memory of the server. This information would otherwise have to be transferred in every session, and this would lead to an unacceptable overhead
30 with up to 50 percent of data transferred in the request being redundant user

profile information. Once the server has stored the user profile information it provides the communication terminal with a communication terminal identification number that uniquely identifies the communication terminal.

- 5 According to the preferred embodiment of the invention the server only stores the user profile information for a predetermined period of time, e.g. 3 hours or 3 days. The period of time may be differentiated in dependence of the kind of subscription the user has. The server deletes the user profile information from the database memory upon expiration of said period of time. In order to avoid
- 10 double use of the same communication terminal identification number the server informs the communication terminal about the duration of this period, whereby the terminal knows when the period has expired. When the period has expired and the communication terminal starts a new session it has to transfer the user profile once more. When the server has stored the user
- 15 profile information once more it provides the communication terminal with a new communication terminal identification number that uniquely identifies the communication terminal for a new period.

- The invention furthermore relates to a method of handling Wireless Session
- 20 Protocol (WSP) sessions between a wireless communication terminal and a corresponding server, wherein: the communication terminal initiates a session by forwarding a request of data to the server, said request comprises an identification of the requested data and a header indicating the data format which shall be handled by the communication terminal; the server upon
- 25 receipt of a request generates a communication terminal identification number and stores said header associated with said communication terminal identification number; said server replies to the request by forwarding the requested data and the communication terminal identification number to the requesting communication terminal; said communication terminal stores the
- 30 communication terminal identification number in a memory. The server stores

the user profile information included in the header and this information may be used later when a new session is initiated.

5 The invention furthermore relates to a wireless communication network for handling Wireless Session Protocol (WSP) sessions between a wireless communication terminal and a corresponding server connected via said network, comprising means in the communication terminal for initiating a session by forwarding a request of data to the server, said requests comprises an identification of the requested data and a communication
10 terminal identification number provided by the server; a database memory connected to the server in order to store user profile information based on the communication terminal identification number received in the request, said user profile information indicates the data format which may be handled by the communication terminal; processing means in order to recall the stored
15 user profile information corresponding to the communication terminal identification number and for replying to the request by forwarding the requested data in the format defined by the user profile information via transmission means to the communication terminal. Such a network will be especially useful when it is used as a cellular network, e.g. a GSM network
20 and the bearer for the request is the standard data transfer or a chain of SMS messages. The savings in cost for a sessions will be important for the user since the saving of the re-transmission of resending the user profile information several times may reduce the number of transmitted messages by up to 50 %.

25

When the communication unit is aware that the user profile information is not stored in the database memory of the server, it has to include a header in the request indicating the data format which will be handled by the communication terminal. The processing means in the server is arranged to derive the user
30 profile information from the header, to store the user profile information in said

database memory, to generate an associated communication terminal identification number; and to forward the communication terminal identification number via said transmission means to the communication terminal. This communication terminal identification number will be valid for the next session
5 if that occurs within the period set by the server.

According to the invention a server unit is provided for use in a wireless communication network for supporting Wireless Session Protocol (WSP) sessions, comprising input means; output means; and processing means
10 controlling the input and output means and a database memory. The database memory contains user profile information for a plurality of communication terminals, said user profile information indicates the data format which may be handled by the communication terminal. The input means are adapted to receive a request for data from a communication
15 terminal, said request initiates a session and comprises an identification of the requested data and a communication terminal identification number. The processing means recalls the stored user profile information by means of the communication terminal identification number received in the request, and the processing means replies to the request by forwarding the requested data
20 in the format defined by the user profile information via said output means. Very often it will be the network operator to which a phone user subscribes that operates the WSP server, too. In practice it can occur that it is the network server that generates the communication terminal identification number to the WSP server, but as far as both the network server and the
25 WSP server are controlled by the same operator these servers may be regarded as are entity. This is also the case when the WSP server operator decides to use communication terminal identification numbers otherwise existing in the system.

When the communication terminal includes a header in the request indicating the data format which may be handled, the processing means of the server has to derive the user profile information from the header, to store the user profile information in said database memory, and to generate an associated communication terminal identification number. Furthermore the processing means forwards the communication terminal identification number via said output means to the communication terminal.

The invention will be described in greater detail in the following by way of example only and with reference to the attached drawings, in which

Fig. 1 shows a comparison between the Internet Architecture and the WAP Architecture;

Fig. 2 schematically shows a connection between a communication terminal and a server according to a preferred embodiment according to the present invention, and

Fig. 3 shows a flowchart over the establishment of a session according to a preferred embodiment according to the present invention.

Fig. 2 shows a wireless communication network for handling Wireless Session Protocol (WSP). The network comprises a wireless communication terminal 100, comprising an antenna 110, and a server 220 connected to a server antenna 200. The communication terminal 100 is for example an ordinary cellular phone provided with a Wireless Application Protocol (WAP). The server is provided by an operator and can handle WAP applications. The WAP comprises the WSP which the present invention is based on. How the WSP is implemented in WAP is described in detail in the Wireless Application Protocol Architecture Specification; Version 0.9; by Wireless Application

Protocol Architecture Working Group;

<http://www.wapforum.org/docs/WAPArch-Sep-97.pdf>.

5 The server 220 includes processing means 221 or a CPU controlling the activity of the server 220. The server 220 will in general be sited at a network operator and therefore not be directly connected to the antenna. However, the hardware between the server 220 and the antenna is not important to understand the invention and these parts are therefore omitted to improve the clarity of the invention. The server receives the request via input means 224.

10 The processing means 221 looks for a heading containing user profile information or a communication terminal identification number in the request.

If the request contains a heading containing user profile information this information is stored in a database memory 222 for use when the server 220

15 replies. If the request contains a communication terminal identification number the corresponding user profile information is recalled from the database memory 222 when the request is replied to. The server 220 is ready for responding the processing means 221 transmits the response via output means 223 to the communication terminal 100 via said output.

20

When using a connectionless WSP session, it is not possible to store WSP headers as a part of a session state at both ends of the connection peers, i.e. between the terminal 100 and the server 220. Therefore, all headers must be re-sent every time a WAP user agent requests a resource from the server 220

25 via a WAP proxy. Over a low bandwidth, high latency bearer, such as Short Messaging Services (SMS), this leads to an unacceptable overhead (only 50 – 75 % of the data sent is pay-load). The present invention solves this problem by using a cookie for storing session headers on the server within the user agent profile (uaprof) resource file defined by WAP. The idea is, that a

30 request of data 120, conveys headers to the server 220, after which the user

agent (client) uses a file-handle to reference the information stored on the server. It is also possible for the operator to provide some pre-defined file-handle in the communication terminal, i.e. the operator has some cookies on the server. Therefore, it is not always necessary for the user agent to define a
5 header, which saves a lot of time for the user agent.

If the operator has provided some cookies on the server, the method is disclosed by the following steps by reference to Fig.2:

the communication terminal 100 initiates a session by forwarding a request
10 120 of data to the server 220, the request 120 comprises an identification of the requested data and a communication terminal identification number provided by the server 220;
the server 220, when receiving the request 120 containing a communication terminal identification number, recalls user profile
15 information from an associated database memory (not shown) corresponding to the communication terminal identification number, and said user profile information indicates a data format which will be handled by the communication terminal 100; and
the server 220 replies 130 to the request by forwarding the requested data
20 120 in the format defined by the user profile information.
the communication terminal can initiate a session comprising a header in a request 140 indicating the data format which can be handled by the communication terminal 100;
the server 220, when receiving the request 140 containing a header, can
25 derive the user profile information from this header and store the user profile information in said database memory and generate an associated communication terminal identification number; and
the server 220 can forward the communication terminal identification number in a reply 150 to the communication terminal 100.

As an alternative method of the invention, which does not require the server to have pre-defined cookies is disclosed by the following steps by reference to Fig.2:

- 5 the communication terminal 100 initiates a session by forwarding a request 140 of data to the server 220, the request 140 comprises an identification of the requested data and a header indicating the data format which shall be handled by the communication terminal 100;
- 10 the server 220 upon receipt of the request 140 generates a communication terminal identification number and stores said header associated with said communication terminal identification number;
- said server 220 replies 150 to the request by forwarding the requested data and the communication terminal identification number to the requesting communication terminal 100;
- 15 the communication terminal 100 stores the communication terminal identification number in a memory (not shown).

Further, when the communication terminal 100 once again initiates a session, and forwards a request 120 of the same data as in the first step, the request 120 includes an identification of the requested data and the communication
20 terminal identification number received from the server 220. When the server 220 receives the request 120, it recalls the header from the database memory which corresponds to said communication terminal identification number, and replies 150 to the communication terminal 100.

25 In both of the methods it is possible for the server to define a period of time in which the user profile information can be stored in the database memory. It is also possible for the server to delete the user profile information from the database memory upon expiration of the defined period of time. The time may for example be 3 hours or 3 days. The period of time may be
30 differentiated in dependence of the kind of subscription the user has. In order

- to avoid double use of the same communication terminal identification number the server informs the communication terminal about the duration of this period, whereby the terminal knows when the period has expired. When the period has expired and the communication terminal starts a new session it has to transfer the user profile once more. When the server has stored the user profile information once more it provides the communication terminal with a new communication terminal identification number that uniquely identifies the communication terminal for a new period.
- 10 The header data structure used by the terminal and the server comprises a sequence of header fields, followed by e.g. image-type-specific data and actual image data. The header field comprises an image type identifier of a multi-byte length (*TypeField*), an octet of general header information (*FixHeaderField*), followed by zero or more extension header fields (*ExtField*).
- 15 The extension headers may be of type binary 00 through binary 11. A header of Type 00 could e.g. indicate a multi-byte bitfield used to specify additional header information. The first bit may be set if a type 00 extension header is set if more data follows. A header of the Type 11 indicates a sequence of parameter/value pairs. These can be used for optimisations and special
- 20 purpose extensions, e.g., animation image formats. The "parameter size" tells the length (1-8 bytes) of the following parameter name. The "value size" gives the length (1-16 bytes) of the following parameter value. The concatenation flag indicates whether another parameter/value pair will follow after reading the specified bytes of data. The actual organisation of the image data
- 25 depends on the image type.

Fig. 3 shows an example of the establishment of a session in accordance with the present invention. The session uses the Wireless Session Protocol, which is to be established between a wireless communication terminal and a

30 corresponding server, START 300. The communication terminal initiates a

session by forwarding a request of data to the server, "FORWARD REQUEST" 310. This request comprises an identification of the requested data and a header indicating the data format, which shall be handled by the communication terminal. If the server does not receive the request, it could be possible to forward a new request, "RECEIVED REQUEST?" 320. When the server has received the request, the server can check whether the identification is recognised or not, "ID UNKNOWN" 330, i.e. if the identification has been stored on the server as a communication terminal identification number or not. If the identification of the terminal is recognised, then the server recalls user profile information from an associated database memory corresponding to the communication terminal identification number. The user profile information indicates a data format which shall be handled by the communication terminal. The server sends a reply to the request by forwarding the requested data in the format defined by the user profile information, "SEND REPLY" 340. Thereafter, the session can be ended by the user, "END" 345.

If the identification of the terminal is not recognised, "ID UNKNOWN" 330, then the server upon receipt of the request generates a communication terminal identification number, "GENERATE ID" 350. Thereafter, the server stores the header associated with said communication terminal identification number, "STORE HEADER" 360. The server replies to the request by forwarding the requested data and the communication terminal identification number to the requesting communication terminal, "SEND REPLY + ID" 370. Finally, the communication terminal stores the communication terminal identification number in a memory, "STORE ID" 380. Thereafter, the user may choose to end the session, "END" 345.

Once the communication terminal identification number has been stored, "STORE ID" 380, it can be possible for the communication terminal to initiate

further sessions, by simply forwarding a request to the server which may include both an identification of the requested data and the communication terminal identification number received from the server. Then it would be possible for the server, upon reception of a request, to recall the header from
5 the database memory which corresponds to the communication terminal identification number.

The invention is not limited to the above described and in the drawing shown of an example of embodiments but can be varied within the scope of the
10 appended claims.

CLAIMS

1. A method of handling Wireless Session Protocol (WSP) sessions between a wireless communication terminal and a corresponding server, wherein:

5 the communication terminal initiates a session by forwarding a request of data to the server, said request comprises an identification of the requested data and a communication terminal identification number provided by the server;

10 the server, when receiving a request containing a communication terminal identification number, recalls user profile information from an associated database memory corresponding to said communication terminal identification number, and said user profile information indicates a data format which will be handled by the communication terminal; and the server replies the request by forwarding the requested data in the format defined by the user profile information.

15

2. A method according to claim 1, wherein

the communication terminal when initiating a session comprising a header in the request indicating the data format which will be handled by the communication terminal;

20 said server, when receiving a request containing a header, derives the user profile information from this header and stores the user profile information in said database memory and generates an associated communication terminal identification number; and

25 said server forwarding the communication terminal identification number to the communication terminal.

3. A method according to claims 1 or 2, wherein the server defines a period of time in which the user profile information is stored in the database memory.

4. A method according to claim 3, wherein the server deletes the user profile information from the database memory upon expiration of said period of time.
5. A method of handling Wireless Session Protocol (WSP) sessions between a wireless communication terminal and a corresponding server, wherein:
- 5 the communication terminal initiates a session by forwarding a request of data to the server, said request comprises an identification of the requested data and a header indicating the data format which will be handled by the communication terminal;
- 10 the server upon reception of a request generates a communication terminal identification number and stores said header associated with said communication terminal identification number;
- said server replies to the request by forwarding the requested data and the communication terminal identification number to the requesting
- 15 communication terminal;
- said communication terminal stores the communication terminal identification number in a memory.
6. A method according to claim 5, wherein the communication terminal, when
- 20 subsequently initiating a session, forwards a request to the server, said request includes an identification of the requested data and the communication terminal identification number received from the server; and the server upon receipt of a request recalls the header from the database memory which corresponds to said communication terminal identification
- 25 number.
7. A wireless communication network for handling Wireless Session Protocol (WSP) sessions between a wireless communication terminal and a corresponding server connected via said network, comprising:

means in the communication terminal for initiating a session by forwarding a request of data to the server, said request comprises an identification of the requested data and a communication terminal identification number provided by the server;

- 5 a database memory connected to the server in order to store user profile information based on the communication terminal identification number received in the request, said user profile information indicates the data format which may be handled by the communication terminal;
- 10 processing means in order to recall the stored user profile information corresponding to the communication terminal identification number and for replying to the request by forwarding the requested data in the format defined by the user profile information via transmission means to the communication terminal.

- 15 8. A network according to claim 7, wherein:
- the communication terminal comprises means for including a header in the request indicating the data format which will be handled by the communication terminal; and
- 20 the processing means in the server is arranged to derive the user profile information from the header, to store the user profile information in said database memory, to generate an associated communication terminal identification number; and to forward the communication terminal identification number via said transmission means to the communication terminal.

25

9. A network according to claim 8, wherein the server comprises a timer and said processing means sets a period of time in which the user profile information is stored in the database memory.

10. A network according to claim 9, wherein the processing means, upon expiration of said period of time, deletes the user profile information from the database memory.

- 5 11. A server unit for use in a wireless communication network for supporting Wireless Session Protocol (WSP) sessions, comprising:

input means;

output means;

10 processing means controlling the input and output means and a database memory;

said database memory contains user profile information for a plurality of communication terminals, said user profile information indicates the data format which may be handled by the communication terminal;

15 said input means are adapted to receive a request for data from a communication terminal, said request initiates a session and comprises an identification of the requested data and a communication terminal identification number;

20 said processing means recalls the stored user profile information by means of the communication terminal identification number received in the request; and

said processing means replies to the request by forwarding the requested data in the format defined by the user profile information via said output means.

- 25 12. A server according to claim 11, and said communication terminal includes a header in the request indicating the data format which may be handled by the communication terminal, wherein:

the processing means derives the user profile information from the header, stores the user profile information in said database memory, and
30 generates an associated communication terminal identification number; and

said processing means forwards the communication terminal identification number via said output means to the communication terminal.

13. A server according to claims 11 or 12, and furthermore comprises a timer,
5 wherein said processing means sets a period of time in which the user profile information is stored in the database memory.

14. A server according to claim 13, wherein the processing means, upon
10 expiration of said period of time, deletes the user profile information from the database memory.

1 / 2

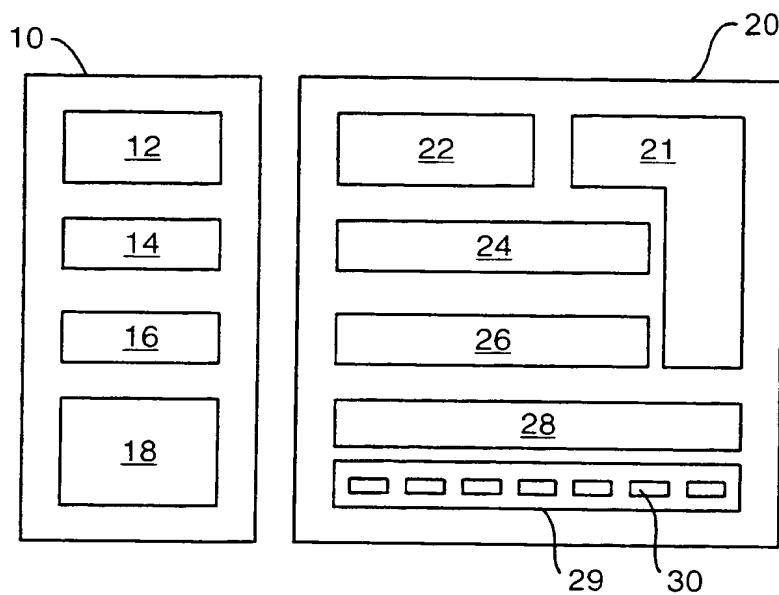


FIG. 1

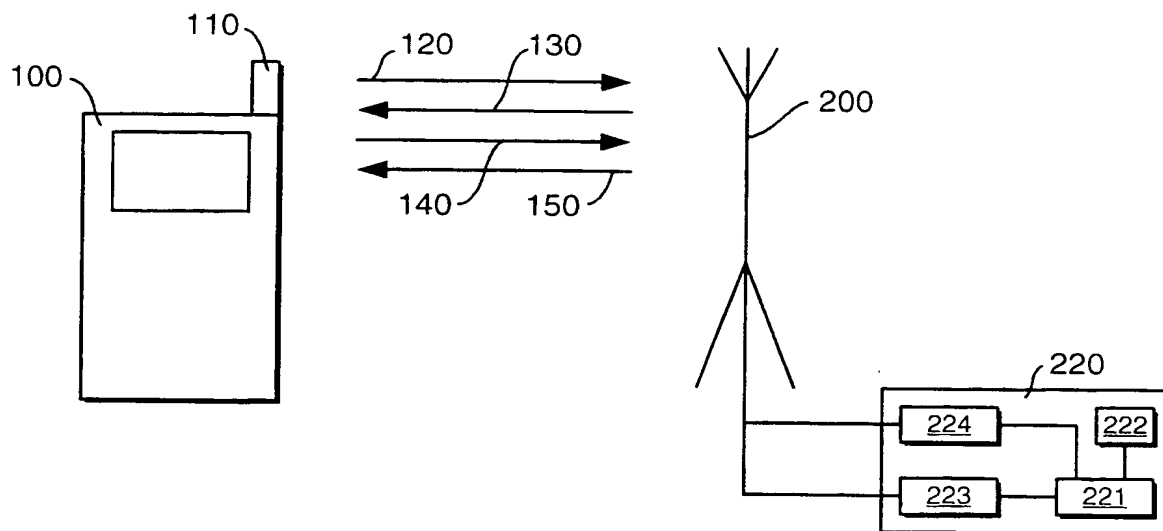


FIG. 2

2 / 2

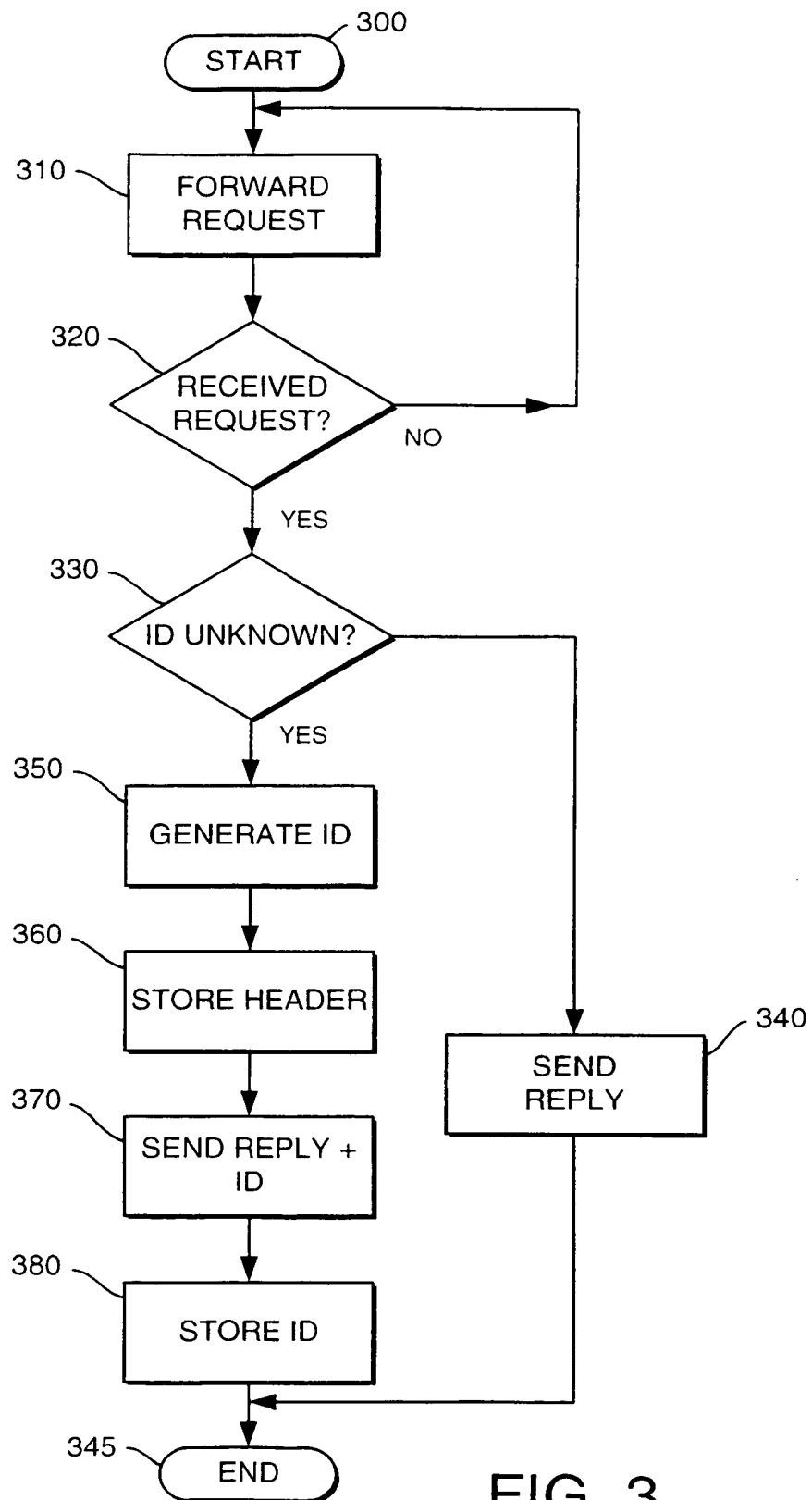


FIG. 3

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum) PAT98501*PCT

Box No. I TITLE OF INVENTION

A METHOD OF AND A NETWORK FOR HANDLING WIRELESS SESSION PROTOCOL (WSP) SESSIONS

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

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☐ the United States
of America only

☐ the States indicated in
the Supplemental Box

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for the purposes of:

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States

☐ all designated States except
the United States of America

☒ the United States
of America only

☐ the States indicated in
the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf
of the applicant(s) before the competent International Authorities as:

☐ agent

☐ common representative

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☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

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DENMARK

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☐ applicant and inventor
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- ☐ applicant only
☐ applicant and inventor
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This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

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☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

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|--|--|
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LS Lesotho |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> LT Lithuania |
| <input checked="" type="checkbox"/> AT Austria | <input checked="" type="checkbox"/> LU Luxembourg |
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| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> BR Brazil | <input checked="" type="checkbox"/> MW Malawi |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> MX Mexico |
| <input checked="" type="checkbox"/> CA Canada | <input checked="" type="checkbox"/> NO Norway |
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| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> PL Poland |
| <input checked="" type="checkbox"/> CU Cuba | <input checked="" type="checkbox"/> PT Portugal |
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| <input checked="" type="checkbox"/> DK Denmark | <input checked="" type="checkbox"/> SD Sudan |
| <input checked="" type="checkbox"/> EE Estonia | <input checked="" type="checkbox"/> SE Sweden |
| <input checked="" type="checkbox"/> ES Spain | <input checked="" type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> FI Finland | <input checked="" type="checkbox"/> SI Slovenia |
| <input checked="" type="checkbox"/> GB United Kingdom | <input checked="" type="checkbox"/> SK Slovakia |
| <input checked="" type="checkbox"/> GE Georgia | <input checked="" type="checkbox"/> SL Sierra Leone |
| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TJ Tajikistan |
| <input checked="" type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input checked="" type="checkbox"/> GW Guinea-Bissau | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> HR Croatia | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> UA Ukraine |
| <input checked="" type="checkbox"/> ID Indonesia | <input checked="" type="checkbox"/> UG Uganda |
| <input checked="" type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> IS Iceland | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> YU Yugoslavia |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | |
| <input checked="" type="checkbox"/> KR Republic of Korea | |
| <input checked="" type="checkbox"/> KZ Kazakhstan | |
| <input checked="" type="checkbox"/> LC Saint Lucia | |
| <input checked="" type="checkbox"/> LK Sri Lanka | |
| <input checked="" type="checkbox"/> LR Liberia | |

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

- ☐
- ☐

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application:* regional Office	international application: receiving Office
item (1) 28 APRIL 1998	581/98	DENMARK		
item (2)				
item (3)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA)
(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA / EP

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)

Number

Country (or regional Office)

Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following number of sheets:

request : 5

description (excluding sequence listing part) : 15

claims : 5

abstract : 1

drawings : 3

sequence listing part of description :

Total number of sheets : 29

This international application is accompanied by the item(s) marked below:

1. ☒ fee calculation sheet
2. ☐ separate signed power of attorney
3. ☐ copy of general power of attorney; reference number, if any:
4. ☐ statement explaining lack of signature
5. ☐ priority document(s) identified in Box No. VI as item(s):
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☐ other (specify):

Figure of the drawings which should accompany the abstract: 2

Language of filing of the international application: ENGLISH

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).


PAUL HIGGIN
EUROPEAN PATENT ATTORNEY

26/4/99.

For receiving Office use only		2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application:		
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): ISA /	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.	

For International Bureau use only
Date of receipt of the record copy by the International Bureau:

PCT

FEE CALCULATION SHEET

Annex to the Request

For receiving Office use only

International application No.

Date stamp of the receiving Office

Applicant's or agent's
file reference

PAT98501*PCT

Applicant

NOKIA MOBILE PHONES LIMITED

CALCULATION OF PRESCRIBED FEES

1. TRANSMITTAL FEE

150 DEM

T

2. SEARCH FEE

2198.35 DEM

S

International search to be carried out by

(If two or more International Searching Authorities are competent in relation to the international application, indicate the name of the Authority which is chosen to carry out the international search.)

3. INTERNATIONAL FEE

Basic Fee

The international application contains _____ sheets.

first 30 sheets

807.76 DEM

b₁

x

remaining sheets

additional amount

=

b₂

807.76 DEM

B

Add amounts entered at b₁ and b₂ and enter total at B

Designation Fees

The international application contains _____ designations.

11

x

185.80

=

2043.80 DEM

D

number of designation fees

amount of designation fee

payable (maximum 11)

Add amounts entered at B and D and enter total at I

2851.56 DEM

I

(Applicants from certain States are entitled to a reduction of 75% of the international fee. Where the applicant is (or all applicants are) so entitled, the total to be entered at I is 25% of the sum of the amounts entered at B and D.)

4. FEE FOR PRIORITY DOCUMENT

P

5. TOTAL FEES PAYABLE

Add amounts entered at T, S, I and P, and enter total in the TOTAL box

5199.91

TOTAL

☐ The designation fees are not paid at this time.

MODE OF PAYMENT

☒ authorization to charge
deposit account (see below)

☐ bank draft

☐ coupons

☐ cheque

☐ cash

☐ other (specify):

☐ postal money order

☐ revenue stamps

DEPOSIT ACCOUNT AUTHORIZATION (this mode of payment may not be available at all receiving Offices)

The RO/ EP ☒ is hereby authorized to charge the total fees indicated above to my deposit account.

☒ is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.

☐ is hereby authorized to charge the fee for preparation and transmittal of the priority document to the International Bureau of WIPO to my deposit account.

28050155

Deposit Account Number

Date (day/month/year)

26/4/99.

Signature

[Signature]

PATENT COOPERATION TREATY

From the

INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

HIGGIN, Paul
Nokia IPR Dept.
Nokia House
Summit Avenue
Farnborough, Hampshire GU14 7LF
GRANDE BRETAGNE

☐ File Record

☒ ☒ Diary

10 JUL 2000

☐ Renewal Record

☐ Citations

☐ Inv Award

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

PCT

Date of mailing
(day/month/year)

06.07.2000

Applicant's or agent's file reference
PAT98501PCT

IMPORTANT NOTIFICATION

International application No.
PCT/EP99/02844

International filing date (day/month/year)
27/04/1999

Priority date (day/month/year)
28/04/1998

Applicant

NOKIA MOBILE PHONES LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

Thomas, R

Tel. +49 89 2399-2247



PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PAT98501PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP99/02844	International filing date (day/month/year) 27/04/1999	Priority date (day/month/year) 28/04/1998
International Patent Classification (IPC) or national classification and IPC H04L12/00		
Applicant NOKIA MOBILE PHONES LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 7 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 24/11/1999	Date of completion of this report 06.07.2000
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Körbler, G Telephone No. +49 89 2399 8250



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP99/02844

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-15 as originally filed

Claims, No.:

1-14 as originally filed

Drawings, sheets:

1/3-3/3 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP99/02844

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims
	No: Claims 1-14
Inventive step (IS)	Yes: Claims
	No: Claims 1-14
Industrial applicability (IA)	Yes: Claims
	No: Claims 1-14

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Cited document:

D1: WO 97 40457 A

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The present formulation of the independent method claims 1 and 5, which can be seen as concerning the same method (**see Item VIII.1**), fails to meet the requirements of Art. 33(3) PCT, because the subject-matter does not involve an inventive step.

The presently available closest prior art is given by document D1.

This document discloses:

A method of handling HTTP sessions (Figure 2, 55) between a communication terminal (60) and a corresponding server (50) , wherein:

the communication terminal initiates a session by forwarding a request of data to the server (Figure 7 (200) (202)), said request comprises an identification of the requested data and a communication terminal identification number provided by the server (page 4 line 27- page 5 line 2);

the server, when receiving a request containing a communication terminal identification number, recalls user profile information from an associated database memory corresponding to said communication terminal identification number, and said user profile information indicates a data format which will be handled by the communication terminal ; and

the server replies the request by forwarding the requested data in the format defined by the user profile information (page 5 line 10 - line 24).

This is large part of the wording of present claims 1 and 5 the subject matter of which differs from the disclosure of D1 only by using a wireless communication terminal for the client and the Wireless Session Protocol (WSP) for the session layer protocol (the prior art uses HTTP).

Very important is that in its essence, WSP is a binary version of HTTP 1.1.

The plain text headers of HTTP are translated into binary code.

WSP (Figure 1, 24) belongs to the same protocol layer (session layer) than HTTP (Figure 1, 14).

The method used for WSP (to set up a session between a client and a server) is known from HTTP and the subject matter of a wireless transmission are also known from the prior art, which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem (to set up a session between a client and a server) posed.

Consequently, the features of present claims 1 and 5 not explicitly mentioned in D1 are found by the skilled person in a most self-evident manner; they are not based on an inventive step, and claims 1 and 5 therefore fail to meet the requirements of Art. 33 PCT.

2. Independent claims 7 and 11, although phrased as system and apparatus claims, are nonetheless simple repetitions of the subject-matter of method claims 1 and 5 and hence do not meet the requirements of Article 33(3) PCT (inventive step).

3. In his reply to the written opinion the Applicant asserts that:

"...D1 only concerns a way of maintaining an active network connection (see D1 page 5 line 3-4). Therefore, the server and the terminal always has to re-establish a session when connecting to the server."

and

"...D1 discloses on page 4 lines 25-27 that the token acts to hold the logical connection to the server on an active or open condition until the client system is finished with the connection and releases it. Accordingly, it is not obvious from D1 that the following advantages can be achieved, i.e. maintaining the advantage of having an active connection to a server without resending user information and reducing the amount of redundant information upon following sessions."

However, document D1 discloses the technical feature of **maintaining** a continuous network connection between the client system and server system (see page 10, line 13-15: "Additional improvements...").

Moreover, document D1 further describes that the system overhead is further reduced and the system capacity is further increased for multiple interactions or transactions within a session by using the keep_alive feature **without re-establishing a session or re-sending the user-profile information** (page 10, line 16-27 "An advantageous means..." and page 11 line 12-15: "Thereafter, communications over...").

These arguments are therefore considered as not convincing.

Re Item VII

Certain defects in the international application

1. The independent claims are not in the two-part form required by Rule 6.3(b) PCT, with a preamble based on D1.
2. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
3. Contrary to the requirements of Rule 5.1 (a)(ii) PCT, the relevant background art disclosed in document D1 is not mentioned in the description, nor is this document identified therein.

Re Item VIII

Certain observations on the international application

1. The independent method Claims 1 and 5 do not meet the requirements of Article 6 PCT, because they lack conciseness.

The various definitions of the invention given in independent claims 1 and 5 are such that the claims as a whole are not concise, contrary to Article 6 PCT, in particular since the subject matter represented in the different claims overlaps to

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP99/02844

such an extent that they could have easily been formulated as a single independent claim, with dependent claims as appropriate.

2. Independent method Claims 1 or 5 do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT, that any independent claim must contain all the technical features essential to the definition of the invention.

In view of the description (see page 6, lines 5-17), it seems that **the informing of the client by the server when the time period has expired** indeed represents an essential feature to define the invention. Furthermore the following features:

- * **Header caching**
- * **defining a period of time in which the user profile information is stored in the database memory,**
- * **deleting user profile information from the database memory of the server upon expiration of said period of time**

also represent essential features.